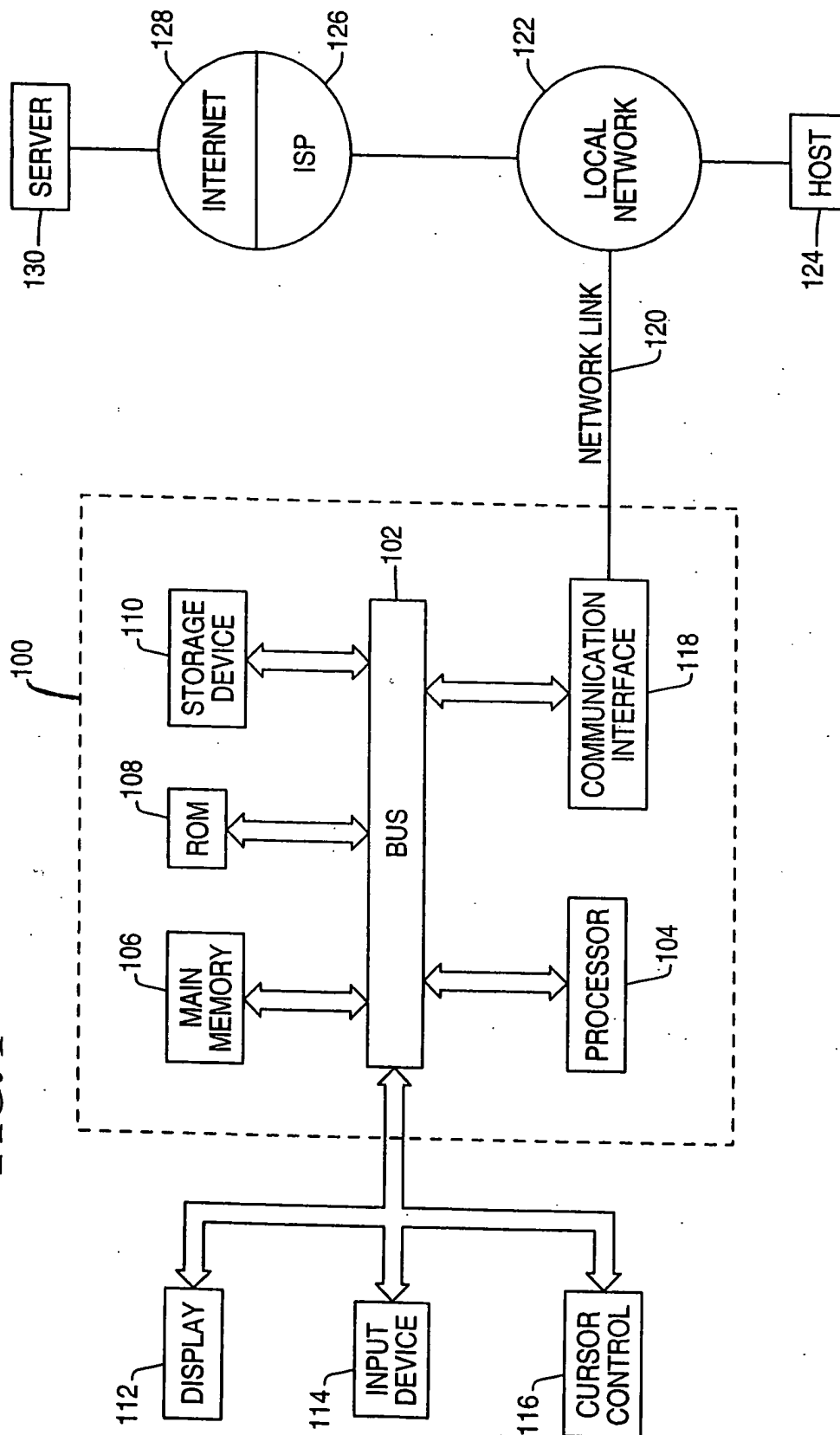


**Amendments to the Drawings:**

The attached 23 sheets of drawings include changes to Figs. 1, and 4-25. The sheets of drawings, which include drawings 1 and 4-25, replace the original drawings 1 and 4-25. In Figs. 1, 10, 12, 14, 16 and 23 the margins have been adjusted. In Figs. 4-25, line quality has been corrected. In Fig. 7, an incorrect and redundant reference "750" has been deleted and a typographical error has been corrected by changing reference number "42" to reference number "742". In Fig. 9, redundant reference number "960" has been changed to reference number "961".

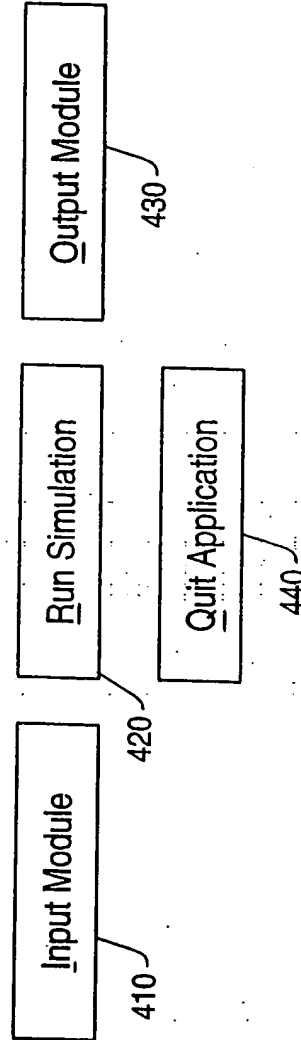
FIG. 1





# Lane And Front-End Effectiveness Model

Developed by  
Human Factors Engineering



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FIG. 4

400

FIG. 5

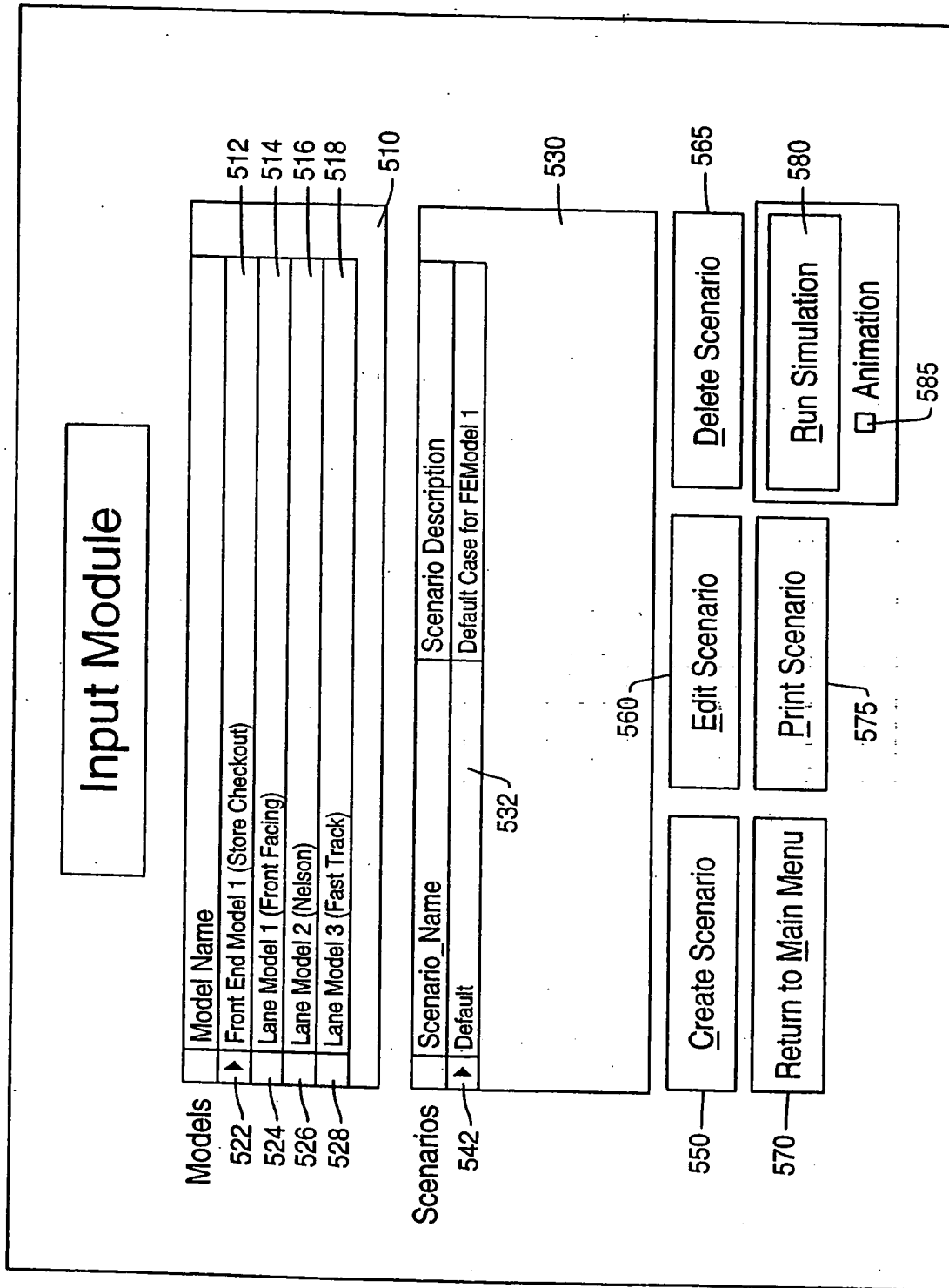


FIG. 6

600

## Create Parameter File

Model Name

Front End Model 1 (Store Checkout)

Please Select the Scenario You Want to Clone

640

Scenario_Name	Scenario_Description
▶ Default	Default Case for FEModel 1

650

Please Type Scenario Name and Description in the Text Boxes Below

Scenario Name

Test 1

620

Scenario Description

Add 4 Checkstands: 1 Express & 3 Regular

630

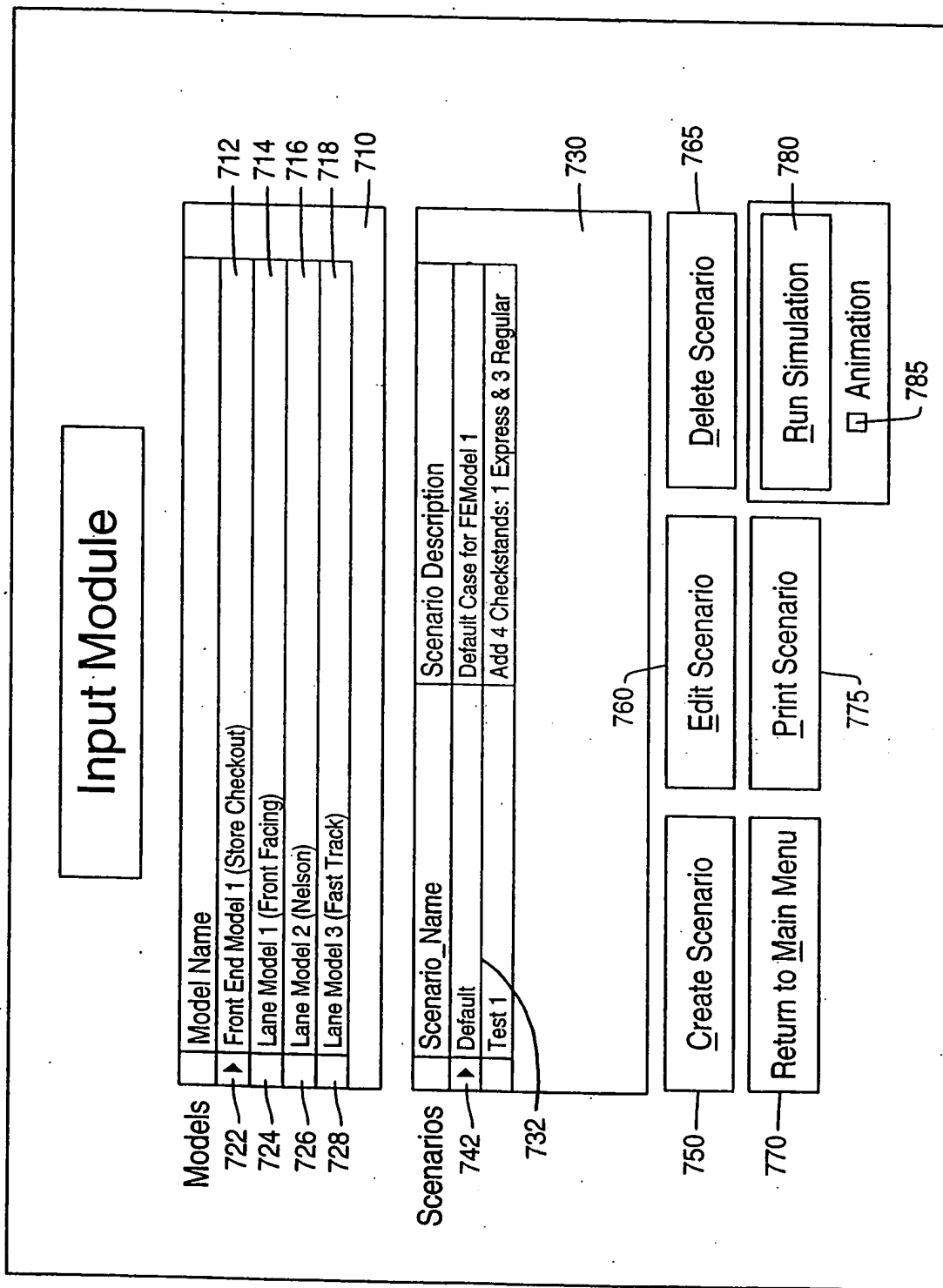
Create and Return

610

Return without Creating

615

FIG. 7



## Edit Parameter File

Model  
Name

### Front End Model 1 (Store Checkout)

Scenario Name

## Test 1

## Parameter Categories

Transaction Itemization

Configuration	830
---------------	-----

## Transaction Finalization

Customer

Transaction  
Bagging

## Schedules

Transaction	828
Intervention	

Model	836
-------	-----

Lane  
Type

4

• **W**

α

All

Parameter

Start time of the simulation scenario (hours)

End time of the simulation scenario (hours)

Number of Fast-Track lanes

Number of Express lanes

Number of Regular lanes

Value

6	0 to 24 (hours)
---	-----------------

23.	0 to 24 (hours)
-----	-----------------

1	0 to 47
---	---------

3	0 to 47
---	---------

13	1 to 48
----	---------

Description

Start time of simulation scenario in hour from midnight

End time of simulation scenario in hours from midnight.  
End time must be greater than Start time

Number of Fast-Track lanes at the front-end. The total number of all lanes cannot exceed 48

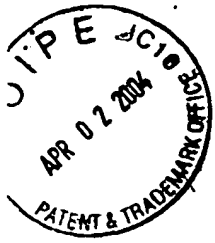
**Number of Express lanes at the front-end. The total number of all lanes cannot exceed 48**

Number of Regular lanes at the front-end. The total number of

Return to Input Form

**FIG. 8**

008



Model Name

Lane Model 2 (Nelson)

Scenario Name

Default

Transaction Pre-Itemization

922

Configuration

930

Transaction Itemization

924

Customer Demand

932

Transaction Finalization

926

Model Parameters

934

Bagging

928

Intervention

936

Lane #	Parameter	Value	Range	Description
1	Time length of scenario	60	0.0 to 1440.0 (minutes)	Length of the simulation scenario in minutes
2	Number of baggers	1	0, 1, or 2	Number of baggers; options are 0 baggers, 1 bagger for both lanes, or 2 baggers - one for each lane
All	Maximum number of items on front belt	20	1 to 200	Maximum number of items on front belt
	Maximum number of items in bagging area	20	1 to 200	Maximum number of items on back belt and bagging area
	Probability of basket icon	0.5	0.0 to 1.0	Probability a customer uses a basket (vs. cart) when their

Return to Input Form

FIG. 9

900

945

961

962

964

966

950

955

960

965

910

915





# Replacement Sheet 10/33

## Arrival Rate Schedule

1040

1050

Enter the number of arrivals per hour in each 15-minute time interval

Time Interval	Number of Arrivals
4:46 AM -- 5:00 AM	0
5:01 AM -- 5:15 AM	0
5:16 AM -- 5:30 AM	0
5:31 AM -- 5:45 AM	0
5:46 AM -- 6:00 AM	0
6:01 AM -- 6:15 AM	4
6:16 AM -- 6:30 AM	12
6:31 AM -- 6:45 AM	8
6:46 AM -- 7:00 AM	20
7:01 AM -- 7:15 AM	28
7:16 AM -- 7:30 AM	20
7:31 AM -- 7:45 AM	24
7:46 AM -- 8:00 AM	28

1015

1010

Print Schedule

Return to Edit Form

FIG. 10

1000



FIG. 11

1100

Average Basket Sizes

1140

Time Interval	Avg Basket Size
12:01 AM -- 12:15 AM	0
12:16 AM -- 12:30 AM	0
12:31 AM -- 12:45 AM	0
12:46 AM -- 1:00 AM	0
1:01 AM -- 1:15 AM	0
1:16 AM -- 1:30 AM	0
1:31 AM -- 1:45 AM	0
1:46 AM -- 2:00 AM	0
2:01 AM -- 2:15 AM	0
2:16 AM -- 2:30 AM	0
2:31 AM -- 2:45 AM	0
2:46 AM -- 3:00 AM	0
3:01 AM -- 3:15 AM	0

1115

1110

1160

Print Basket Sizes

1165

Return to Edit Form



Replacement Sheet 12/33

Schedules

1205

1220

Super Helpers

1225

Baggers

1230

All Personnel

1240

Regular Cashiers

1250

Express Cashiers

1215

Fast-Track Cashiers

1215

Time Interval	Regular Cashiers
12:01 AM -- 12:30 AM	0
12:31 AM -- 1:00 AM	0
1:01 AM -- 1:30 AM	0
1:31 AM -- 2:00 AM	0
2:01 AM -- 2:30 AM	0
2:31 AM -- 3:00 AM	0
3:01 AM -- 3:30 AM	0
3:31 AM -- 4:00 AM	0
4:01 AM -- 4:30 AM	0
4:31 AM -- 5:00 AM	0
5:01 AM -- 5:30 AM	0
5:31 AM -- 6:00 AM	0
6:01 AM -- 6:30 AM	2
6:31 AM -- 7:00 AM	2
7:01 AM -- 7:30 AM	3
7:31 AM -- 8:00 AM	3
8:01 AM -- 8:30 AM	3

1260

Print Schedules

1265

Return to Edit Form

FIG. 12

1200

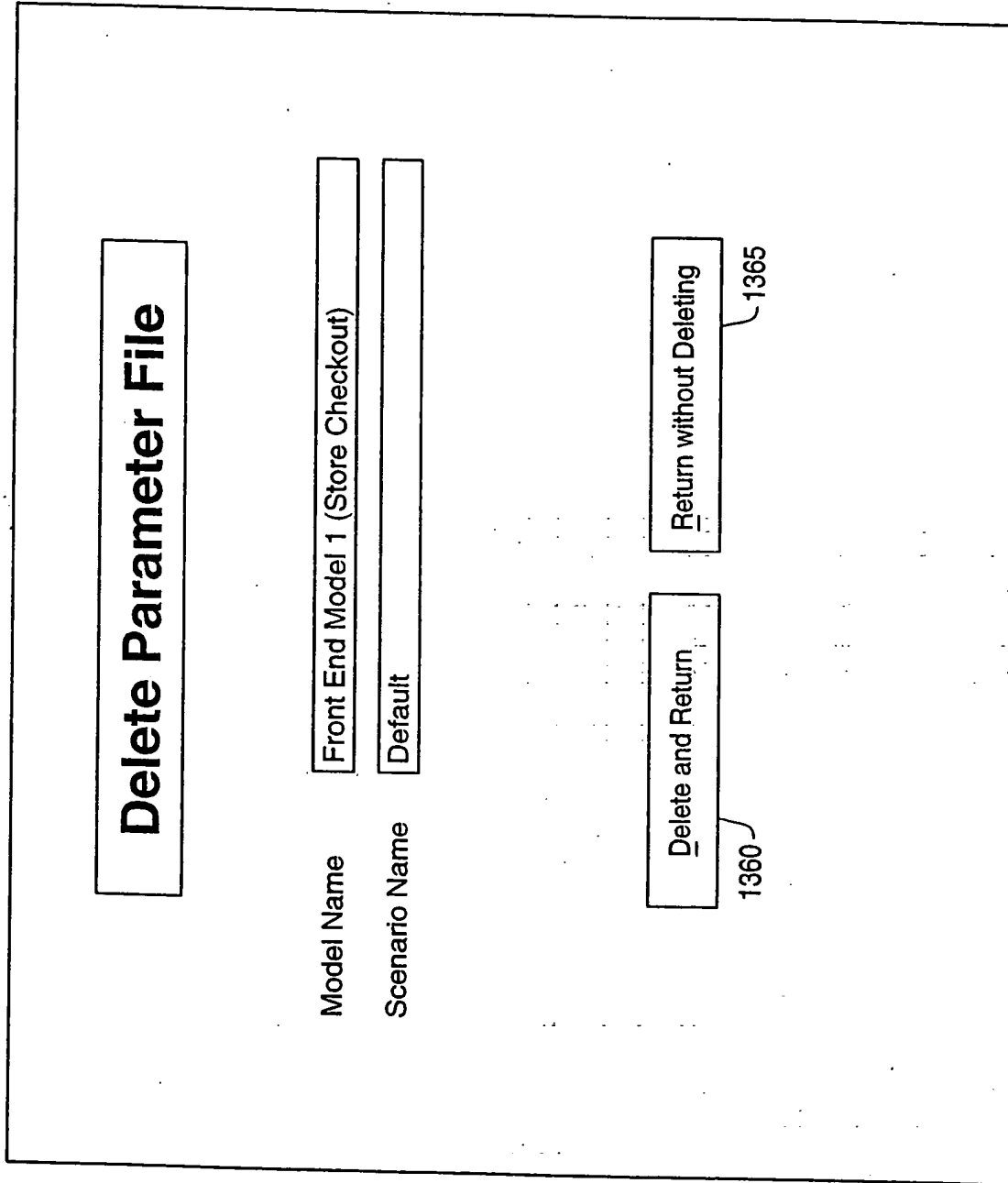
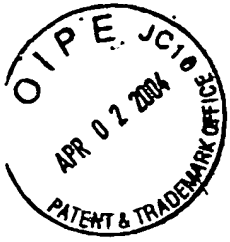


FIG. 13

1300



Replacement Sheet

14/33

Scalar Input Values

1 of 1+    141 of 141    100%    88%

### Input Parameters For Front End Model 1 (Store Checkout)

February 24, 1999

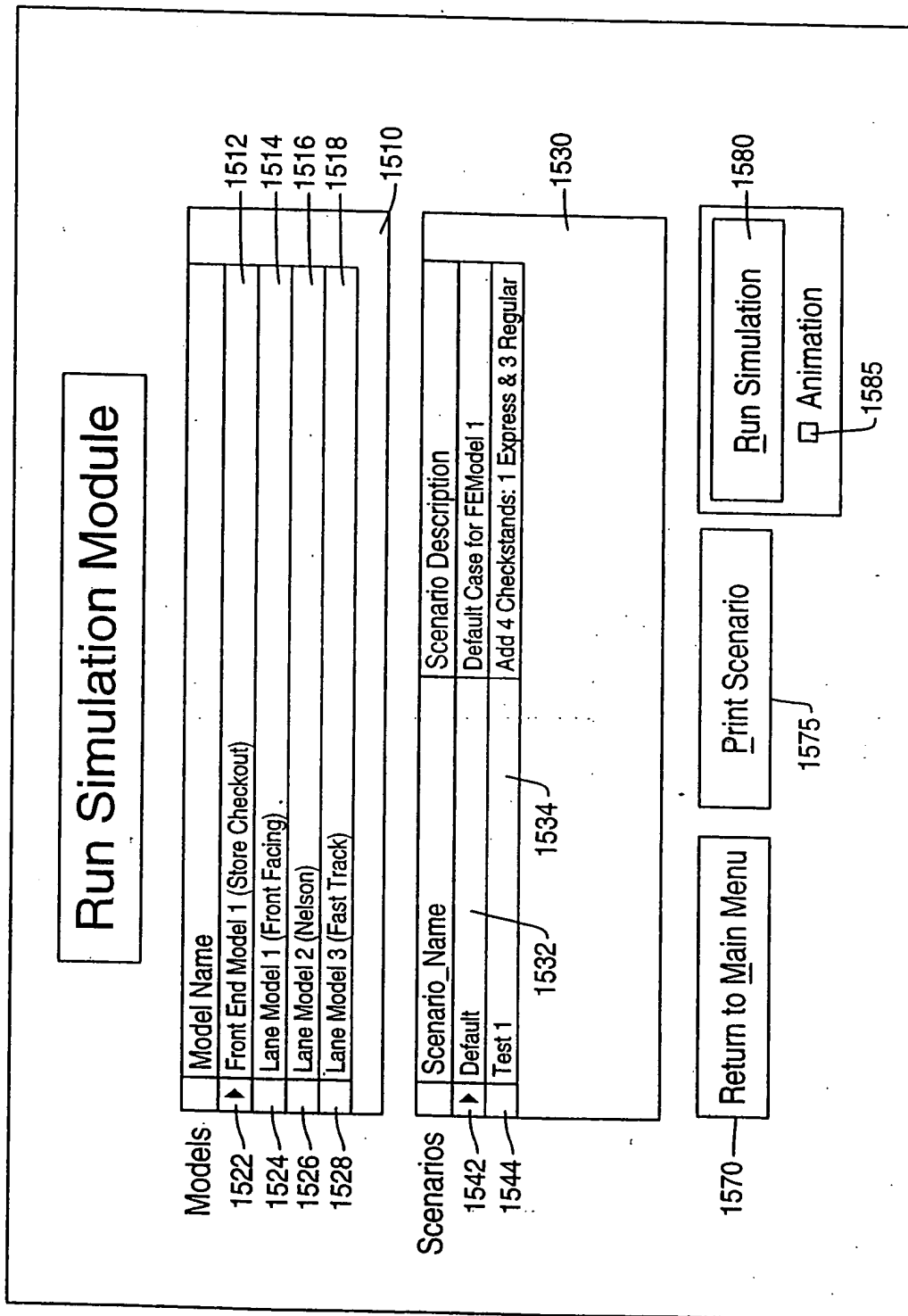
Scenario Name: Default

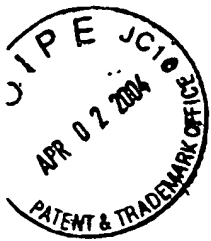
Scenario Description: Default Case For FEM

<u>Parameter</u>	<u>Value</u>	<u>Range</u>	<u>Description</u>
Start time of the simulation scenario (hours)	6	0 to 24 (hours)	Start time of the simulation scenario in hour from midnight. Start time must be less than End time.
End time of the simulation scenario (hours)	23	0 to 24 (hours)	End time of the simulation scenario in hours from midnight. End time must be greater than Start time.
Number of Fast-Track lanes	1	0 to 47	Number of Fast-Track lanes at the front-end. The total number of all lanes (Fast-Track + Express + Regular) cannot exceed 48.
Number of Express lanes	3	0 to 47	Number of Express lanes at the front-end. The total number of all lanes (Fast-Track + Express + Regular) cannot exceed 48.
Number of Regular lanes	13	1 to 48	Number of Regular lanes at the front-end. Must be at least 1 Regular lane. The total number of all lanes (Fast-Track + Express + Regular) cannot exceed 48.

FIG. 14

FIG. 15





# Replacement Sheet 16/33

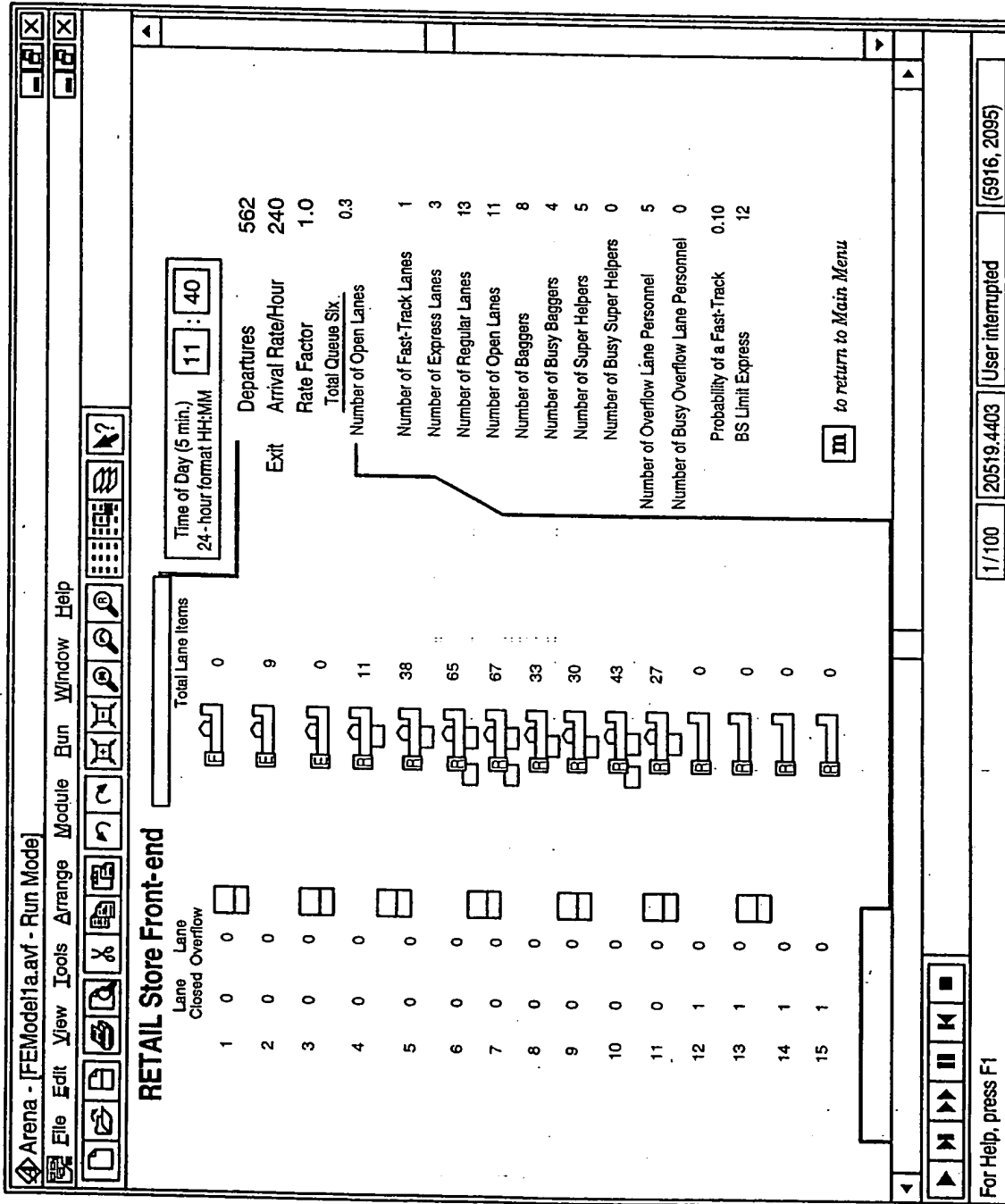


FIG. 16

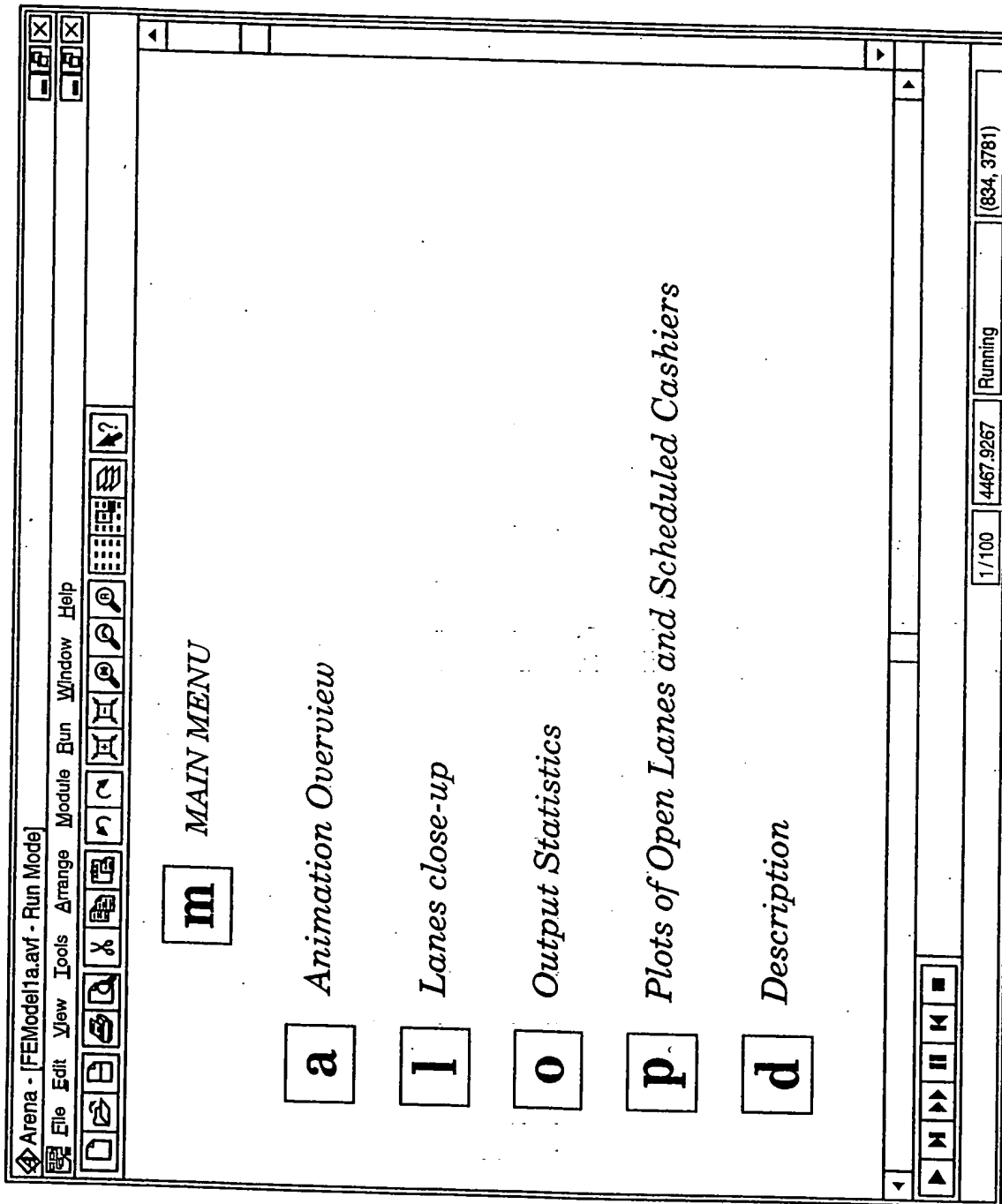


FIG. 17





# Replacement Sheet 18/33

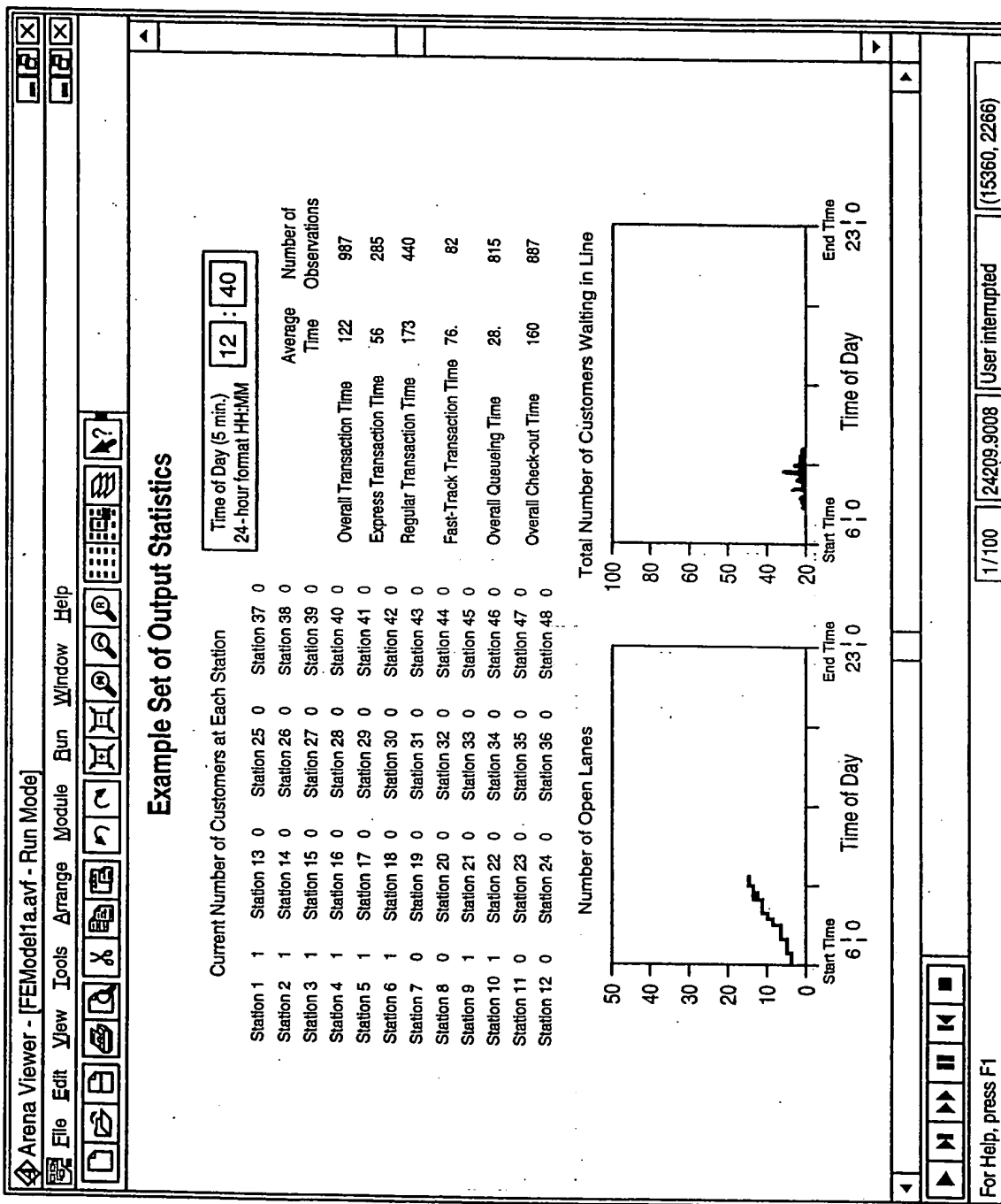


FIG. 18

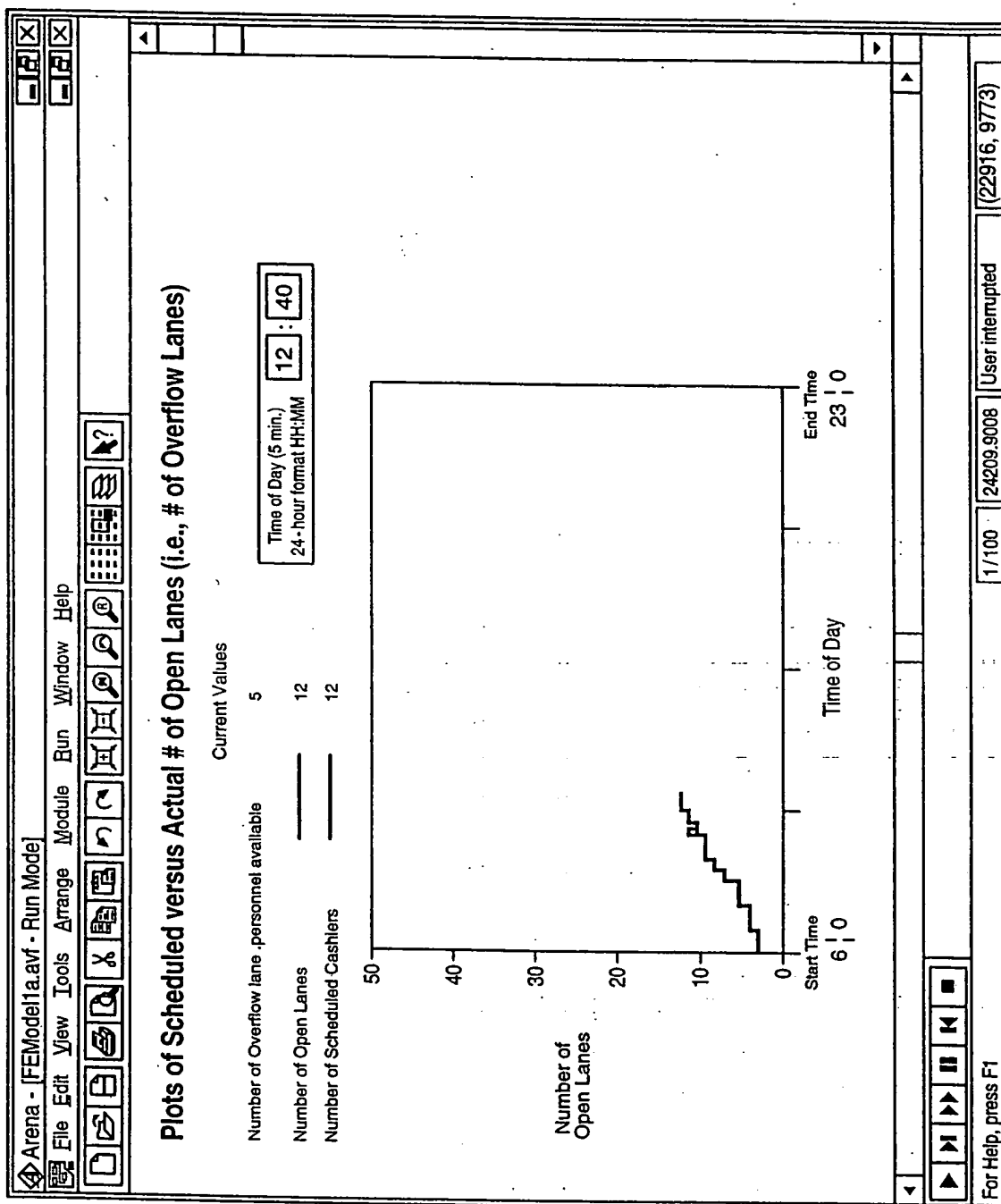


FIG. 19

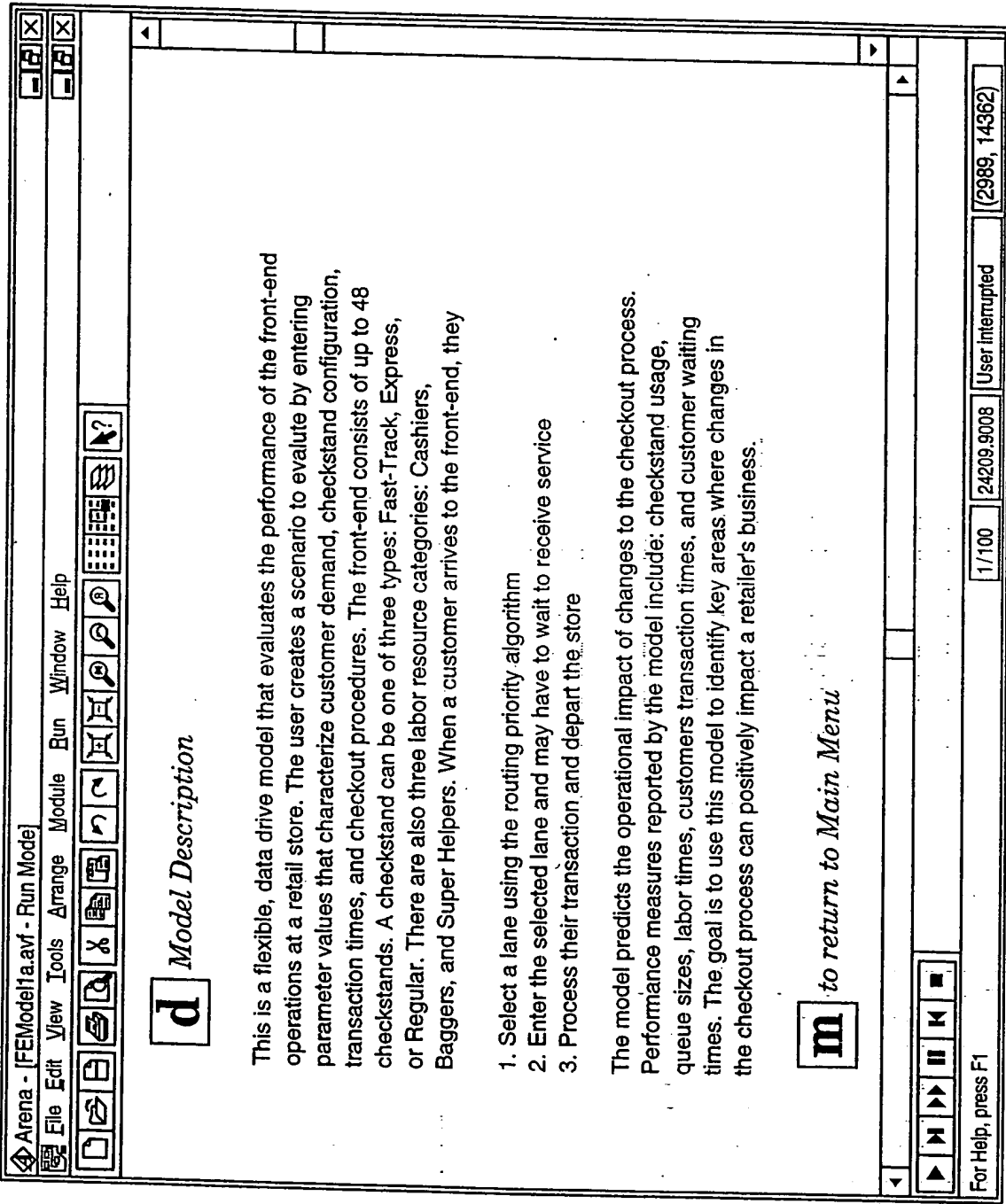
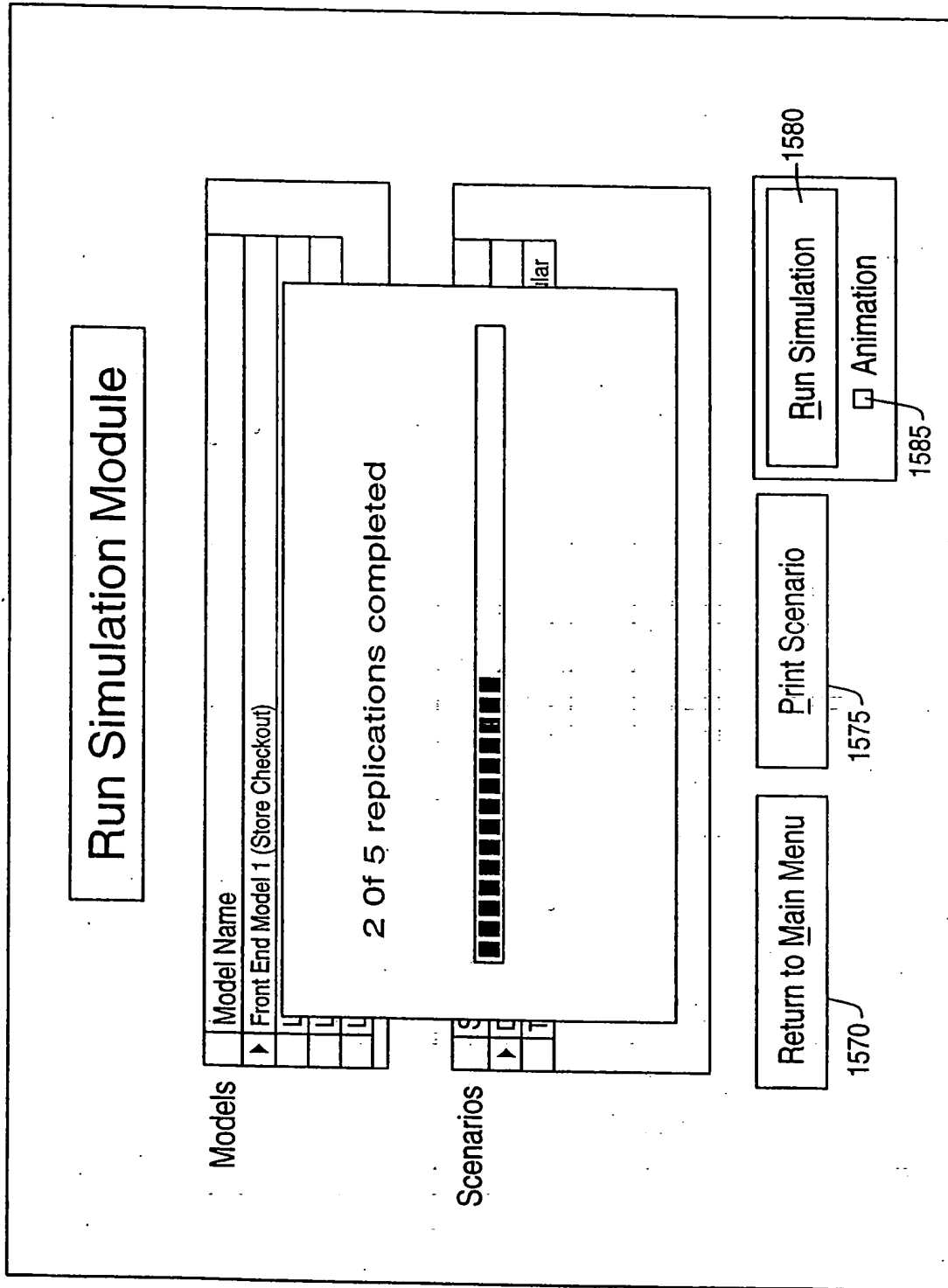


FIG. 20



**FIG. 21**

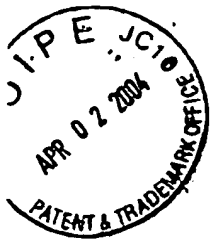
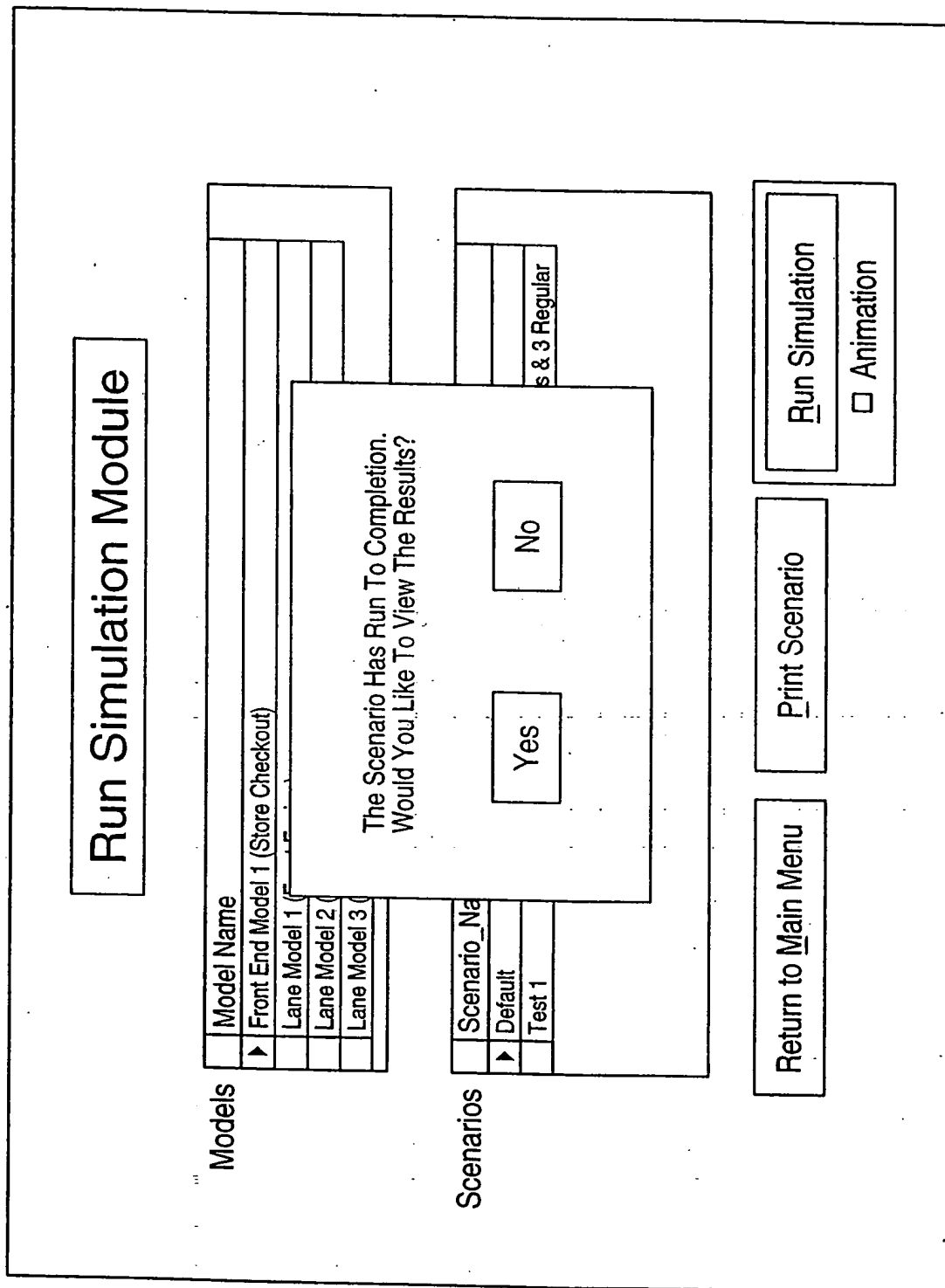


FIG. 22



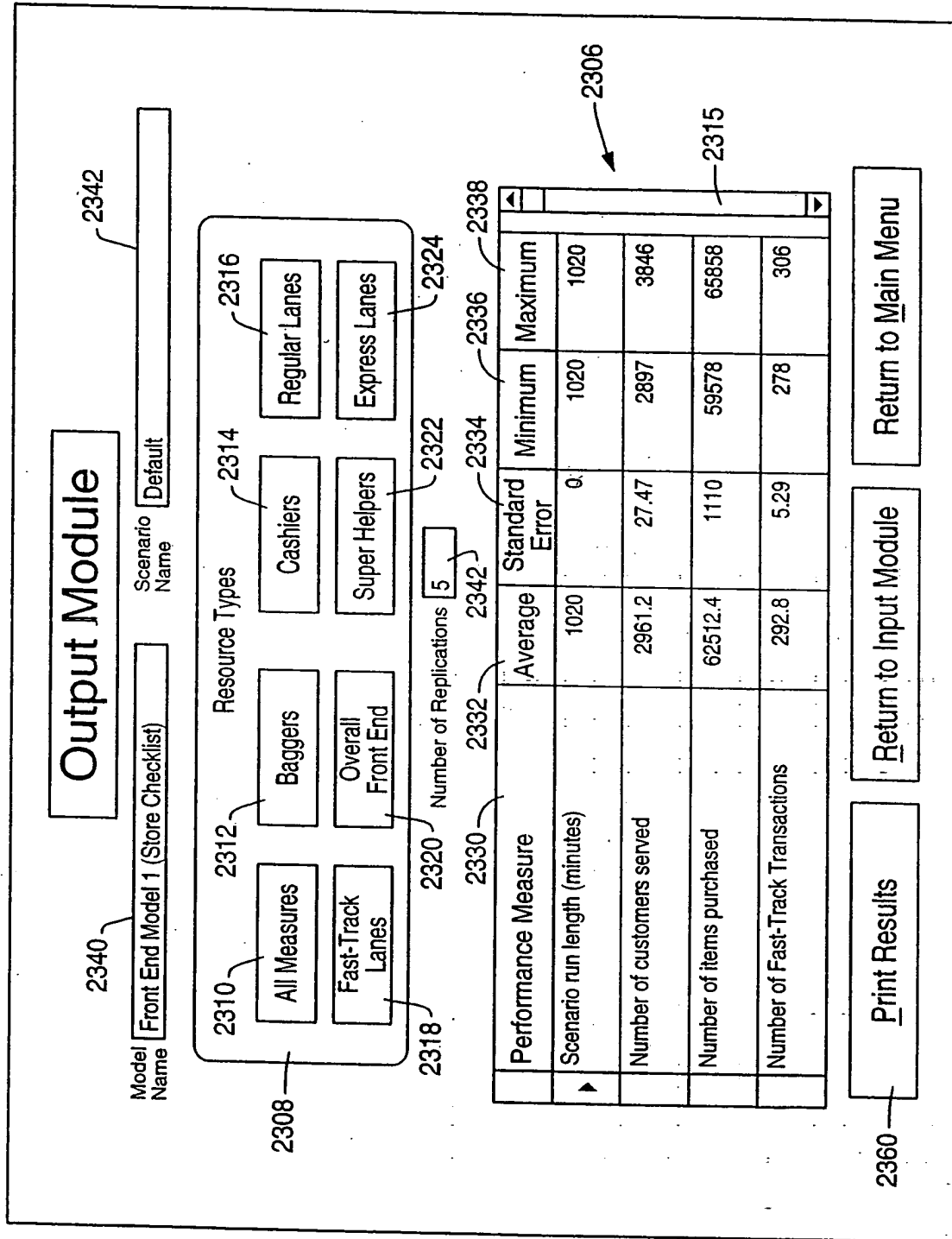


FIG. 23

2300

# Output Module

Model Name Lane Model 2 (Nelson) Scenario Name Default

2442

All Measures

Customer

Cashier

Lane

Bagger

Number of Replications 50

Performance Measure	Average	Standard Error	Minimum	Maximum
Scenario run length (minutes)	60	0	60	60
Total number of transactions lane 1	19.06	0.45	11	26
Total number of transactions lane 2	18.88	0.45	11	24
Total number of transactions both lanes	37.94	0.88	22	58

Lane # 1 2 All

2406

2415

Print Results

Return to Input Module

Return to Main Menu

FIG. 24

2400

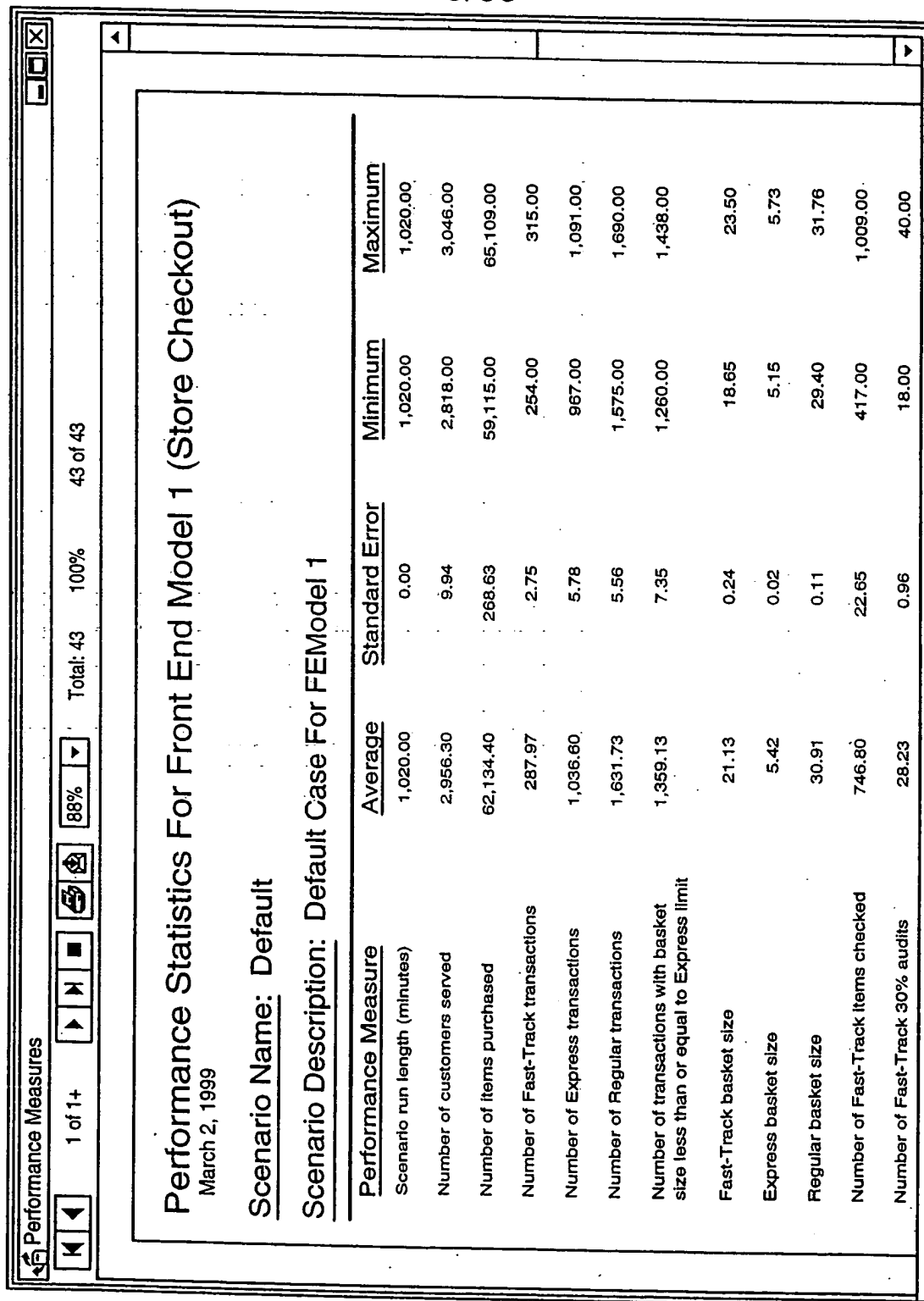
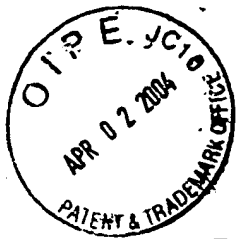


FIG. 25